Standard Operating Procedure
09 - READING BASED PM

A. Purpose

Condition based preventive maintenance often falls within ***two*** categories ***Readings*** and ***Usage***. SOP-09 illustrates the first example of a Condition Based PM identified through **Readings**. When readings are captured through the normal PM work order closing process, a Condition Based PM work order will be generated when a specified Reading falls outside the normal operating range.

The second common example of a Condition Based PM is Usage, i.e. mileage, or hours (*See SOP-10 USAGE BASED PM*). When a piece of equipment accumulates the specified number of miles or hours, a Usage PM work order is generated.

B. Responsibilities

- **Maintenance Manager**
  The Maintenance Manager is responsible for determining the scope, interval, generation and creation of Preventive Maintenance procedures.

- **Customer Service / Technician**
  Customer Service / Technician is responsible for closing preventive maintenance work orders. The Technician is also responsible for performing the assigned task(s) and making recommended adjustments to procedures as necessary.

C. Process Overview

Maintenance Manager / Customer Service / Technician

Step 1: Create a Condition based PM.

Step 2: Associate this Condition Based PM with a specific piece of equipment.

Step 3: Schedule Equipment PMs.

Step 4: Print PM Work Orders:
- Distribute PM Work Orders to Technicians
- Technicians Perform PM Tasks
- Technicians turn-in Completed Work Orders

Step 5: Close completed PM work orders.

Note: In the event that a designated Equipment Reading is outside of the acceptable specification limits, a Caution window will "pop-up". ***If this happens, repeat Steps 3 - 5 until the problem is rectified.***

D. Process Steps

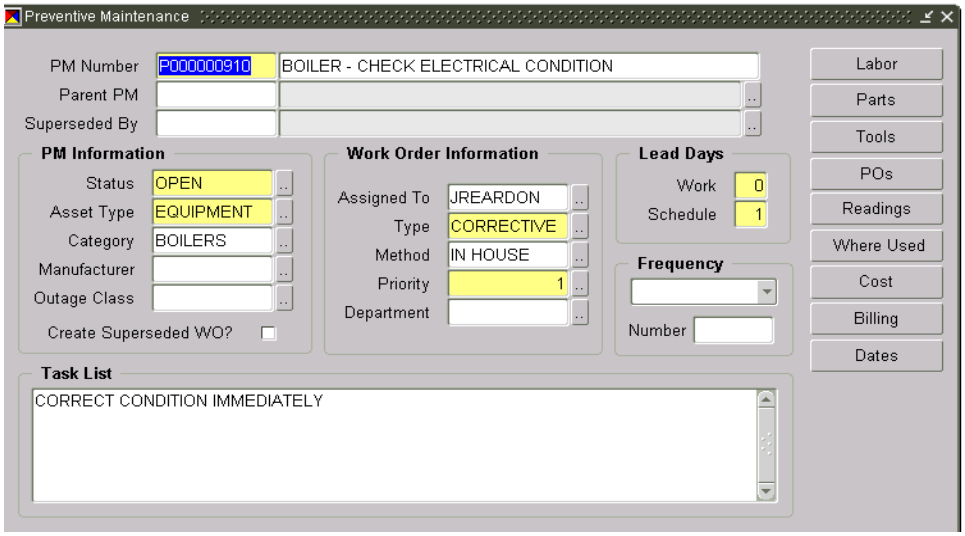
READINGS

PREVENTIVE MAINTENANCE FORM

Step 1: Create a Condition Based PM

To establish a Condition Based PM through Readings, ***i.e. AMPS***, follow the steps outlined below:

- ***Create*** a **Condition Based PM** for a particular type of equipment, ***i.e. Boilers***.



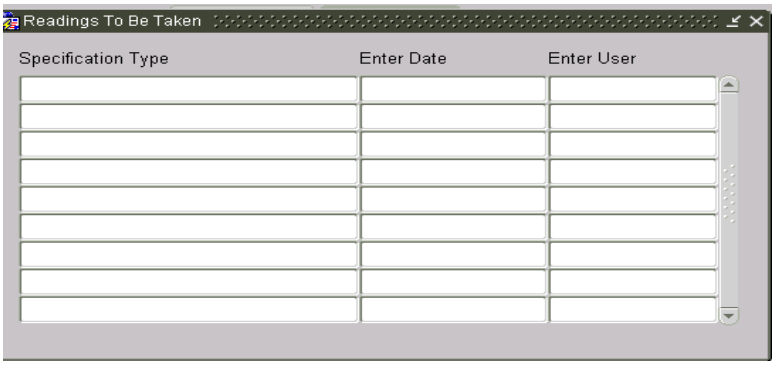
Fill in the standard Preventive Maintenance fields and Billing as per usual with the exception of the following:

- This Reading based PM is **never** superseded.
- ***Tab*** to the **Frequency** field and ***select*** a "**Blank**" value
- ***Tab*** to the Frequency **Number** field and ***leave*** it "**Blank**".
- ***Tab*** to the **Task List** and ***type*** in **PM *tasks***.
- ***Click*** on the **Readings** button.

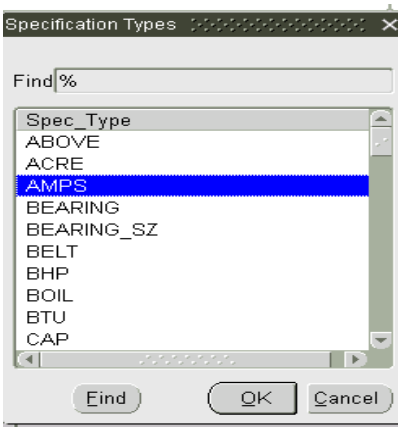
READINGS

PREVENTIVE MAINTENANCE FORM – READINGS BUTTON

Readings To Be Taken:

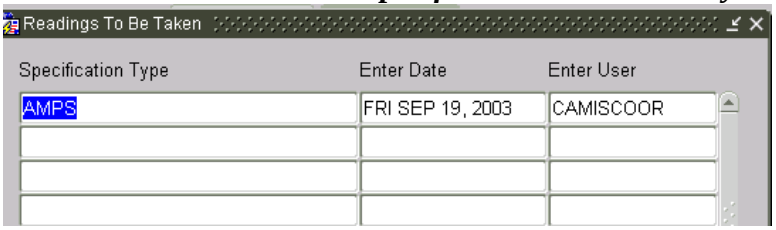


- ***Select*** the **Specification Type *AMPS*** from the list of values (***right click*** or **F9**).



- ***Click*** **OK**

Result: ***The AMPS Specification Type is now loaded. It also identifies the date and User the Specification was entered by.***

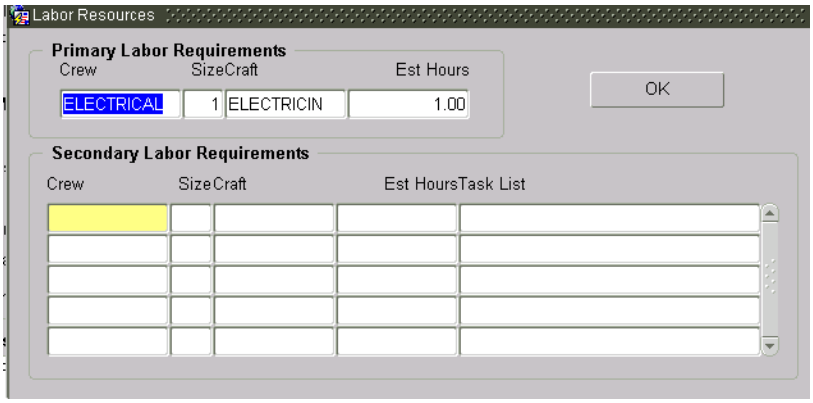


- ***Click*** on the **X** to return to the Preventive Maintenance Form.

READINGS

PREVENTIVE MAINTENANCE FORM – LABOR BUTTON

- ***Click*** on the **Labor** Button



- ***Select*** the **Crew**, ***i.e. ELECTRICAL*** from the list of values (***right click*** or **F9**).
- ***Tab*** to the **Crew Size** and ***type*** the **number** required, ***i.e. 1***
- ***Tab*** to the **Craft** and ***select*** **Electrician** from the list of values (***right click*** or **F9**).
- ***Tab*** to the **Est Hours** field and ***type*** in the **number** of hours, ***i.e. 1.00***
- ***Click*** **OK**

Result: ***This will now bring you back to the Preventive Maintenance form.***

Note: ***Now that the Condition Based Preventive Maintenance procedure for AMPS is established, you now need to associate this PM procedure with a specific piece of equipment.***

To associate this Condition Based PM with a specific piece of equipment:

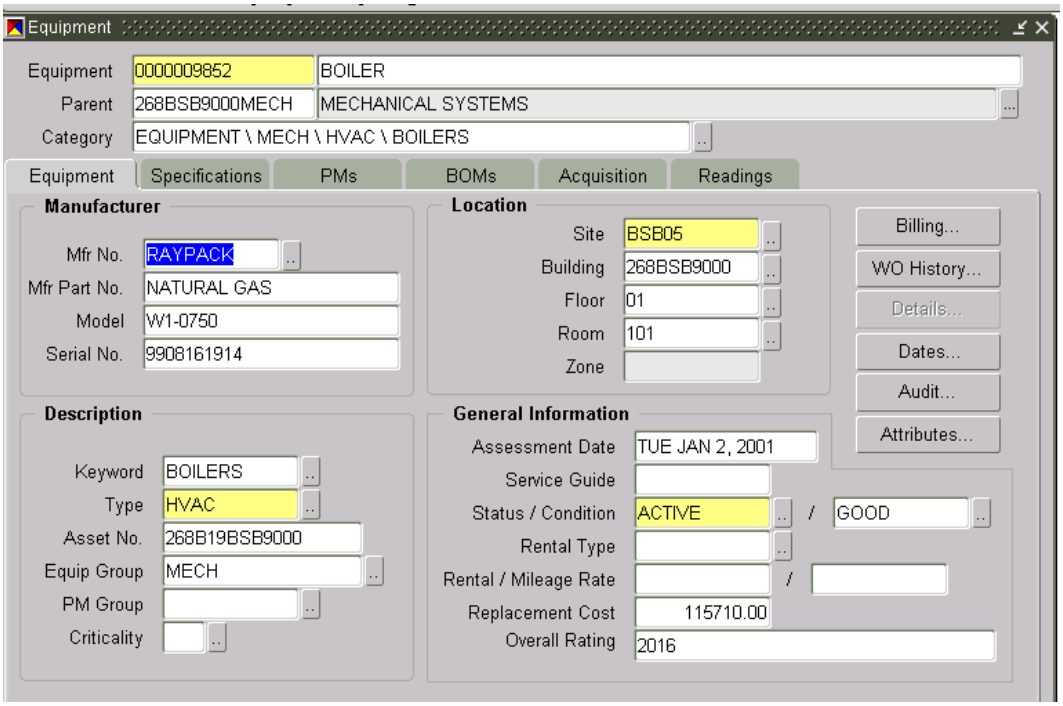
- ***Close*** the **Preventive Maintenance** form
- ***Go to*** the **Equipment** form

READINGS

EQUIPMENT FORM

Step 2: Associate a Condition Based PM with a specific piece of equipment

- ***Locate*** the **equipment** you wish to establish the Readings for, ***i.e. Equipment ID Number*** **0000009852**



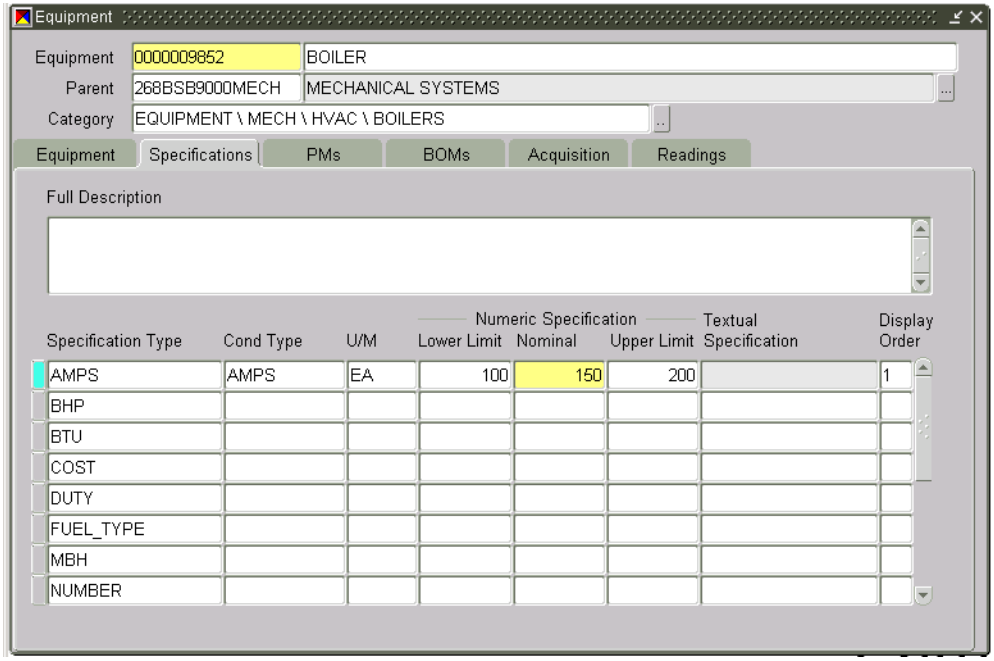
- ***Click*** on the **Specifications** Tab.

<u>Result</u>: **This will bring you to the Specifications for this piece of equipment.**

READINGS

EQUIPMENT FORM – SPECIFICATIONS TAB

Note: ***Ensure the Specification Type, i.e. AMPS, is listed in the Specification Type table below. If it is not, insert it into this Specification Type table.***



From the **Specification Type *AMPS***:

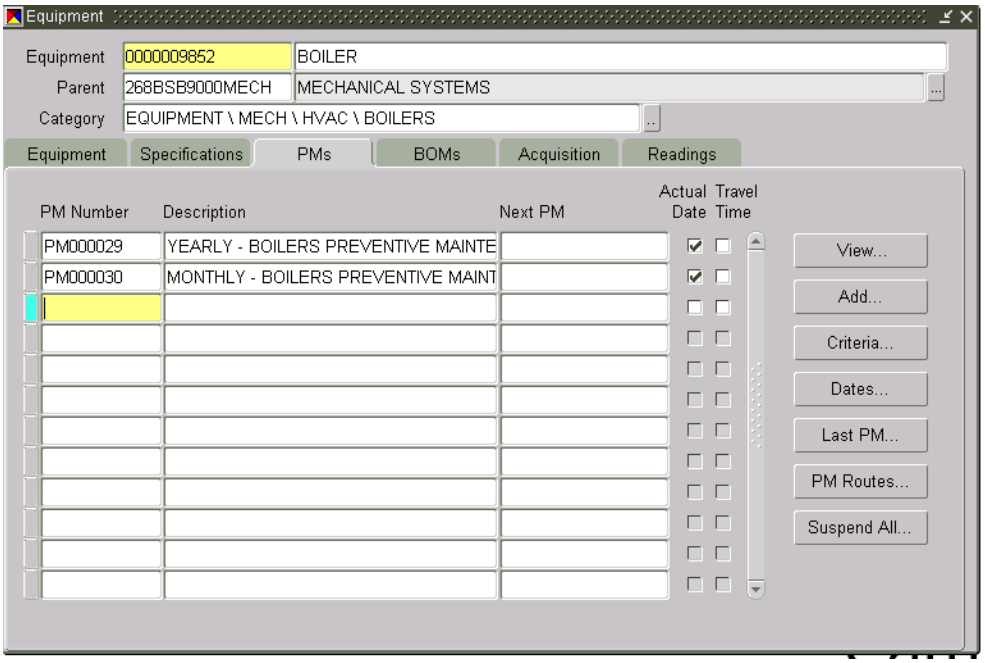
- ***Tab*** to the **Condition Type** field and ***select*** **AMPS** from the list of values
- ***Tab*** to the **U/M** field and ***select*** **EACH** from the list of values
- ***Tab*** to the **Lower Limit** field and ***type*** in the **minimum tolerance, *i.e. 100***
- ***Tab*** to the **Nominal** field and ***type*** in the **Standard (expected) reading**, ***i.e. 150***
- ***Tab*** to the **Upper Limit** field and ***type*** in the **maximum tolerance**, ***i.e. 200***
- ***Tab*** to the **Display Order** field and ***type*** in the **rank** to display the specification, ***i.e. 1 for first***

- ***Click*** on the **PMs** Tab

Result: **This will bring you to the Preventive Maintenance procedures for this piece of equipment**

READINGS

EQUIPMENT FORM – PMs TAB



To insert the newly created Condition Based PM Reading:

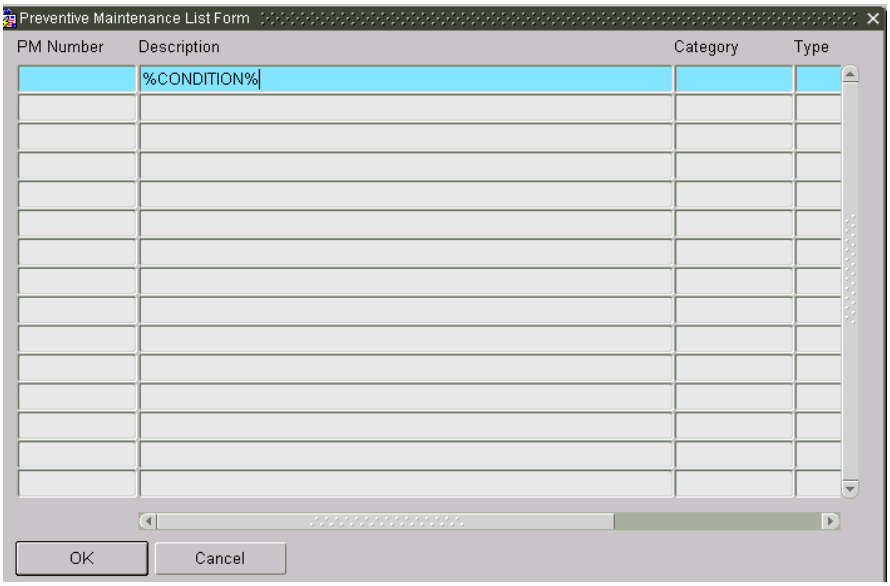
- ***Go to*** a blank **PM Number** field
- ***Right click*** and ***select*** **List of Values** or ***F9*** in the **PM Number** field

Result: **The Preventive Maintenance List Form appears**

READINGS

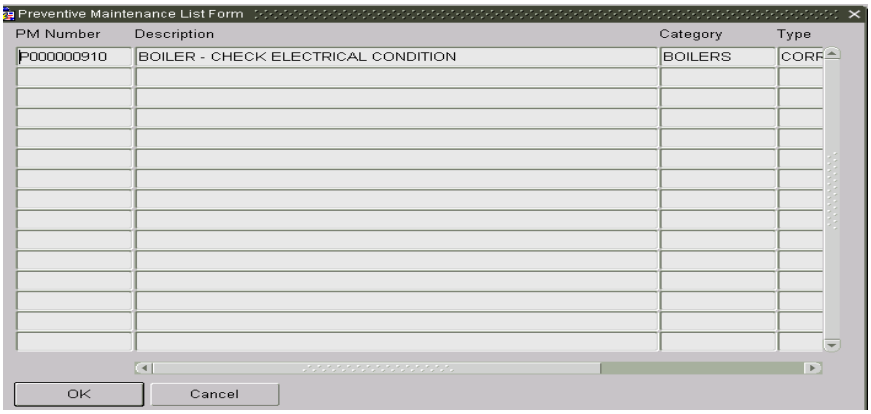
EQUIPMENT FORM – PMs TAB

PREVENTIVE MAINTENANCE LIST FORM



Locate the **Condition Based PM** created by:

- ***Tab*** to the **Description** field and ***type*** '**%CONDITION%**'
- ***Click*** on the **Green Traffic Light** or ***press*** **F8**
- ***Select*** appropriate **PM**



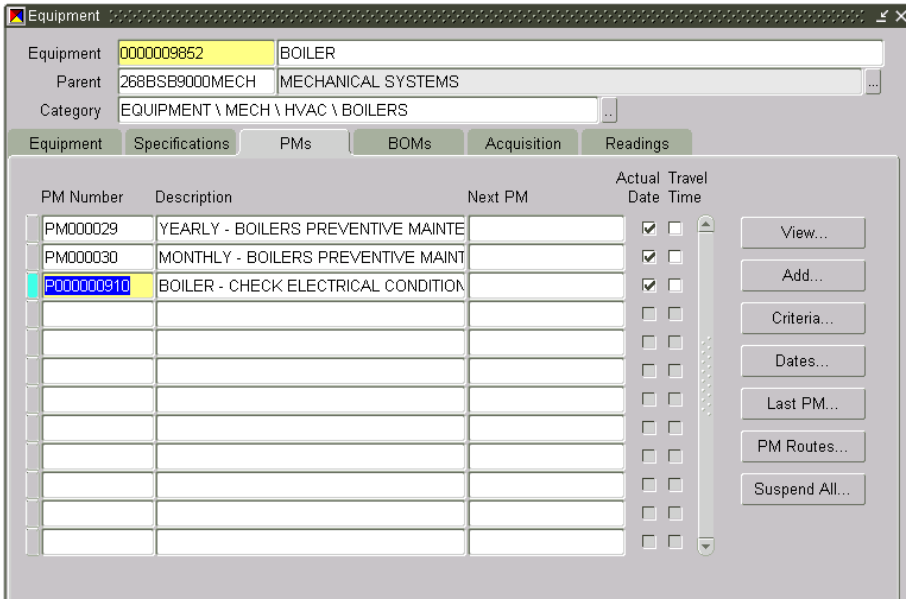
- ***Click*** **OK**

Result: ***The Condition PM information is now populated.***

READINGS

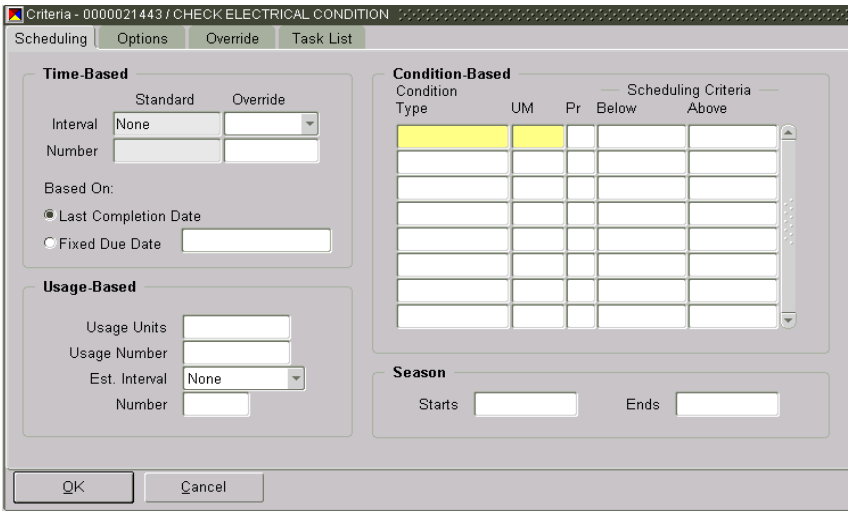
EQUIPMENT FORM – PMs TAB

Result: ***The Condition PM Number is now linked to this piece of equipment.***



Note: ***Condition PMs are not time based – the Next PM date field must be left blank.***

- ***Click*** on the **Criteria** Button



Result: ***The Criteria form is now displayed for this PM.***

READINGS

EQUIPMENT FORM – PMs TAB

Ensure the following:

Time-Based:
- **Override** field is ***Blank***
- **Last Completion** Date field is ***selected***

Usage-Based:
- **All fields** are ***blank*** and **Est. Interval** is ***None***

Condition Based:
- ***Select*** **AMPS** by ***right click*** or **F9** (L.O.V.)
- ***Tab*** to **Priority** field and ***type*** in the **priority**, ***i.e. 1***
- ***Tab*** to the **Below** field and ***type*** in the **minimum** acceptable range, ***i.e. 100.***
- ***Tab*** to the **Above** field and ***type*** in the **maximum** acceptable range, ***i.e. 200***.

Season:
- ***Leave*** this area **blank**

- ***Click*** **OK**

Result: ***The Readings Based PM is now active.***

READINGS

EQUIPMENT FORM – PMs TAB

Note: ***A Reading Based PM will generate when the following two conditions are met:***

- ***A reading outside of the normal operating range is entered during a work order closing,*** and
- ***When equipment PMs are scheduled***.

For reading based PM's to be effective it is critical to schedule Equipment PMs immediately following the work order closing when ever an established limit has been exceeded.

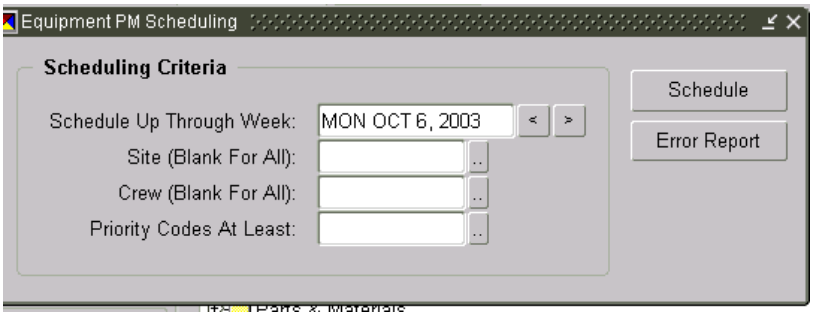
SEE THE EXAMPLE OF A READING BASED PM THROUGH READINGS ON PAGES 12 - 18.

READINGS

SCHEDULE EQUIPMENT PMs

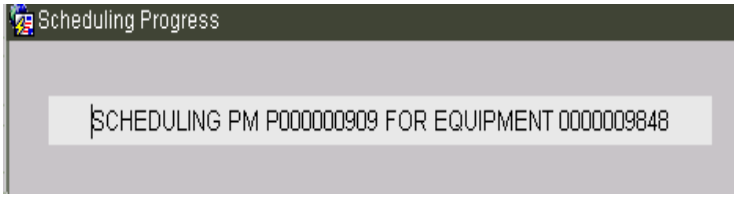
Step 3: Schedule Equipment PMs.

Go to the Schedule Equipment PMs form.



- **Click on the Schedule Button**

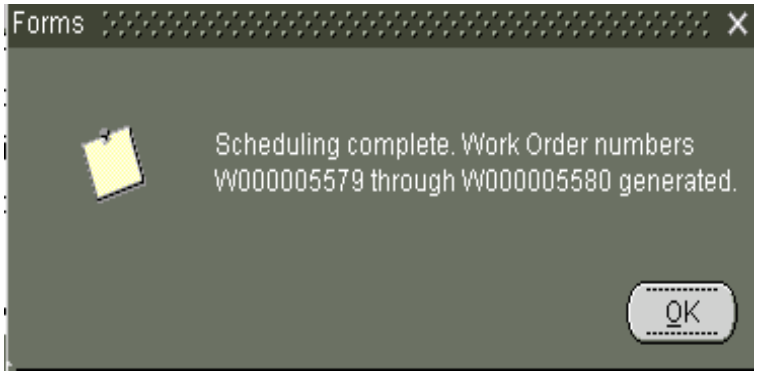
Result: **The Equipment PM will schedule.**



Note: **(*This may take a few minutes*.)**

READINGS

SCHEDULE EQUIPMENT PMs



- ***Click*** **OK** after Scheduling is complete.
- ***Click*** on the **X** to close the Equipment PM Scheduling form.

READINGS

PRINTING / DISTRIBUTING PM WORK ORDERS

Report – Work Order Ticket

Step 4: Print PM Work Orders

- **Distribute PM Work Orders to Technicians**
- **Technicians Perform PM Tasks**
- **Technicians turn-in Completed Work Orders**

The Batch Work Order function can be found from the Main Menu (Navigator).

Go to the **Main Menu (Navigator*)***

- ***Open*** the **Work Orders** folder
- ***Open*** the **Reports – Work Order Tickets** folder
- ***Open*** the Report – **Work Order Ticket**

Sign onto the **Database User Authentication** Screen:

- ***Click*** on the **Submit Query** button

Result: **This will invoke Adobe Acrobat Reader**

Go to **File Menu** and Select the Print Option or ***click*** on the **Printer** button

- ***Click*** **OK**

Result: **The PM Work Orders will be sent to the printer.**

At this time:

- **Distribute PM Work Orders to Technicians**
- **Technicians Perform PM Tasks**
- **Technicians turn-in Completed Work Orders**

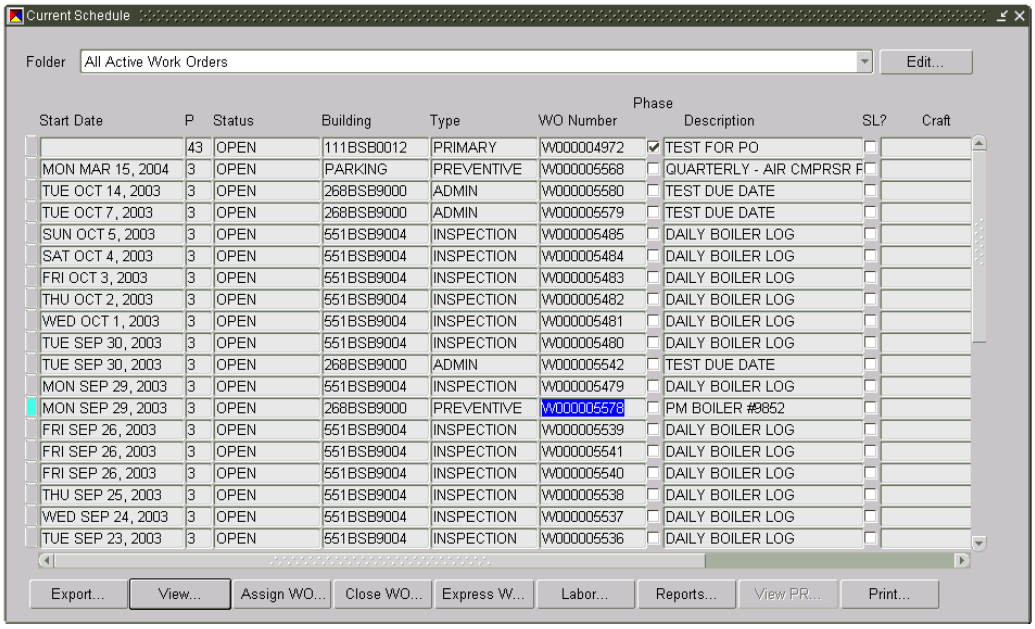
READINGS

CLOSING EQUIPMENT PMs

Step 5: Close completed PM work Orders

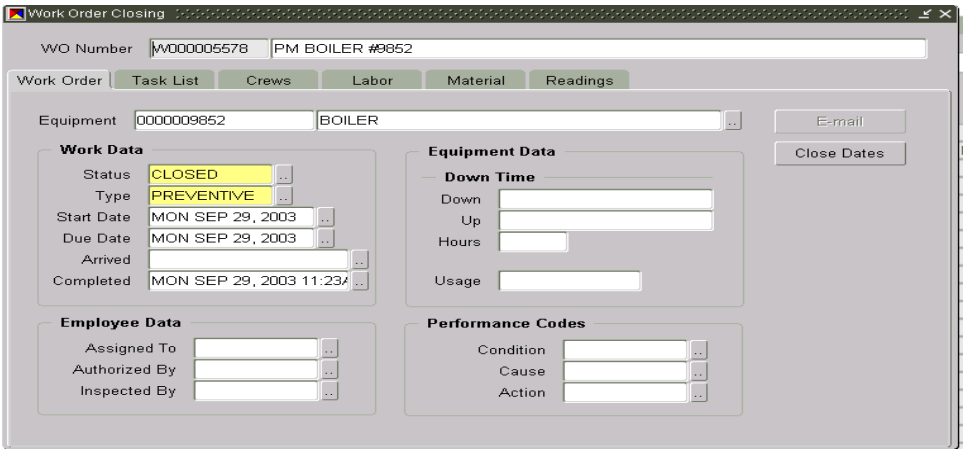
Go to the Current Schedule form.

- ***Select*** the **Work Order** to be closed.



- ***Click*** on the **Close WO** button**.**

Result*:** ***The Work Order Closing Form appears.



READINGS

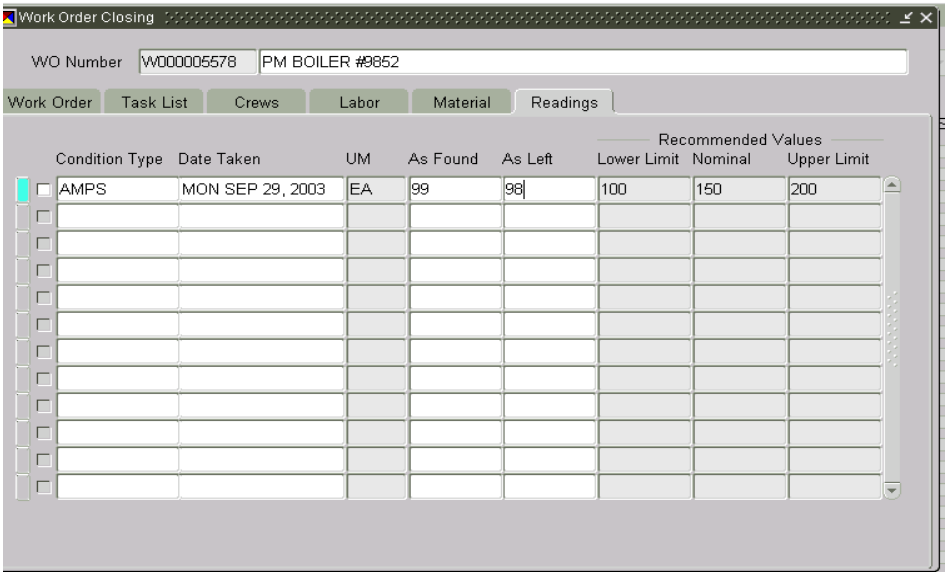
CLOSING EQUIPMENT PMs

To close this Work Order:
- ***Change*** the **Status** from OPEN to **CLOSED**
- ***Fill in*** appropriate **dates**

From the completed Work Order Ticket (ex. Page 18) –

Verify and update appropriate fields in the following Tabs:
- **Task List**
- **Crews**
- **Labor**
- **Material**

Go to the **Readings** Tab:



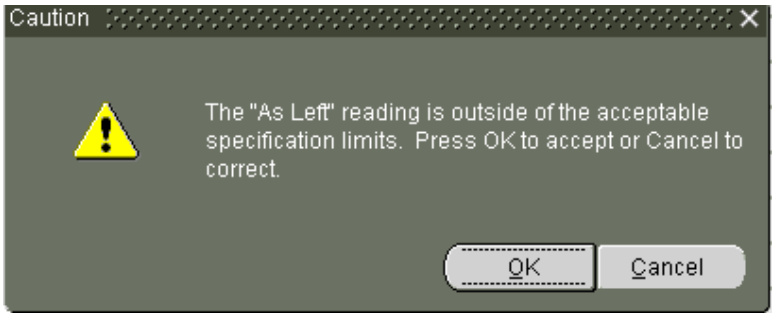
- ***Select*** the **Condition Type**, ***i.e. AMPS***
- ***Tab*** to the **Date Taken** field, ***type*** in appropriate **date**
- ***Tab*** to the **As Found** field, ***type*** in **value found, *i.e. 99 amps***.
- ***Tab*** to the **As Left** field, ***type*** in **value left**, ***i.e. 98 amps.***

Note: ***The As left (98 amps) is outside the normal operating tolerance (100 – 200 amps).***

READINGS

CLOSING EQUIPMENT PMs

Result: **The following Caution pop-up window appears:**



- ***Click* OK**

Note: ***At this time, it is critical to correct the deficient reading and to run through Schedule Equipment PMs on pages 12-18.***

Immediate Action Steps Outlined:
- **Schedule Equipment PMs**
- ***Locate*** deficient **Reading PM Work Order** on the **Current Schedule**
- ***Print*** the deficient **Reading PM Work Order, (*See Step 4 on page 14*)**
- ***Dispatch*** crew or technician
- ***Correct the deficient Reading*** within **acceptable limits**, i.***e. 100-200 amps*** by ***updating*** the appropriate **Readings**.
- ***Close* Work Order** via the ***Work Order Closing Form.***

READINGS

CLOSING EQUIPMENT PMs

WORK ORDER TICKET

WO Number: W000005581
Description: BOILER - CHECK ELECTRICAL CONDITION

Enter User: JREARDON
Type: CORRECTIVE
Status: OPEN
Priority: 1
Method: IN HOUSE
Crew: ELECTRICAL
Craft: ELECTRICIN
Assigned To: JREARDON REARDON, JOHN
Est Hours: 1

Site: BSB05
Building: 268BSB9000
Bldg Desc: OFFICE BUILDING #2
Floor: 01
Room: 101

Schedule Date: 29-SEP-2003
Due Date:
Modify Date:
Start Date:
Nonavailable Time:
Req Type: PM
Req Number: P000000910
Requestor:
Telephone:
Mail Code:
Department:
CP Number:
Equipment: 0000009852
Nomenclature: BOILER

Task List

CORRECT CONDITION IMMEDIATELY

Cond Type	Um	Spec Number	Lower Limit	Upper Limit	As Found	As Left
AMPS	EA	150	100	200		

- ***Technician*** will fill out the **As Found** and **As Left** condition for **AMPS**.

Note: This Condition PM Work Order displays Lower and Upper Limits for this piece of equipment.